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Fiscal Policy in Low-Income Africa

Steven O'Connell

Fiscal restraint, a precondition for economic recovery in much of Africa, should go hand-in-hand with improved public sector efficiency in delivering basic human services and upgrading infrastructure.

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In many African nations, the fiscal balance is extremely fragile, so fiscal restraint is necessary for stabilization and adjustment efforts to succeed.

Governments tend to increase public expenditures when export commodity revenues are high — and maintain public spending even after revenues fall. This is a formula for building unmanageable debt. Botswana and Cameroon, which exercised restraint during boom times, are exceptions to the rule in Africa.

Inflation, driven by public spending, has serious consequences such as the erosion of the real value of taxes, adding to public deficits. However, attempts to reduce inflation through fiscal austerity may have undesirable side effects, if austerity is pursued in the wrong way when public sector real wages are driven down below subsistence, productivity is reduced.

Low public sector productivity results in poor delivery of human services, the deterioration of infrastructure, hindering economic growth, and low generation of revenue.

Fiscal deficits drove real exchange rates up in the late 1970s and early 1980s — and fiscal policy should now facilitate real depreciation adjustment by pulling deficits down.

External aid has often supported unsustainable fiscal policy. Far from lessening the need for structural adjustment, it should now be used for rehabilitation and infrastructure development.

Market-oriented exchange rates are not a substitute for fiscal restraint, but a complement. Flexible rates alone failed in Zambia and Sierra Leone. Combined with prior fiscal restraint, however, they succeeded in Ghana.

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Fiscal Policy in Low-Income Africa

by

Stephen O'Connell

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1. Introduction

As did the rest of the developing world, low-income African countries borrowed heavily (though mainly from noncommercial sources) in the period after 1975 to finance consumption and domestic capital formation in the face of adverse terms of trade shocks and weak growth in export demand from the developed countries. This borrowing not only helped smooth out absorption in the face of temporary income shortfalls, but also allowed a number of countries to maintain macroeconomic and sectoral policies that by the early 1980s appeared unsustainable in the long run (World Bank, 1981). When financial inflows dried up in the early 1980s, in the middle of a sustained slump in commodities prices and at the onset of a drought that affected large parts of the region, many countries were forced to face the reality that existing levels of absorption were no longer sustainable even in the short run. The adjustment to this reality has been harsh. Table 1 summarizes the extremely poor macroeconomic performance of sub-Saharan Africa in the 1980s, both in absolute terms and relative to the rest of the developing world.

This paper reviews the literature and country experience on the macroeconomics of fiscal policy in low-income Africa.[3] Given the experience of the 1970s and 80s, the ultimate focus of the discussion must be the interaction of fiscal policy with the challenges of stabilization and structural adjustment. Two dominant themes emerge for fiscal policy. The first is the importance of overall fiscal restraint as a precondition for

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[3] The paper draws on unpublished World Bank material on the following countries: Botswana, Cote d'Ivoire, Ghana, Kenya, Sierra Leone, Tanzania, Zaire, and Zambia. With the exception of Botswana and Cote d'Ivoire, these countries are all in the World Bank's category of "Low-income" (per capita income below $400 in 1985). Botswana and Cote d'Ivoire, with per capita incomes of $840 and $660, respectively, are classified as "Middle-income".

success of stabilization and structural adjustment efforts. The second is the importance of improved public sector performance in delivering infrastructural services.

It goes with the territory in SSA that these themes should pose a difficult dilemma: how can fiscal restraint be achieved when basic government services are in disarray and the stock of social overhead capital is badly depreciated? The answer is that the government can improve both its own and the private sector's efficiency by concentrating its efforts on revenue mobilization, rehabilitation of infrastructure (e.g., roads), and the delivery of basic human services (e.g., education and health), while reducing its presence in other areas of the economy. This is a medium term prospect, however: in most cases, even the most ambitious public sector program will not be able to resolve the dilemma without substantial inflows in the form of aid and debt reschedulings.

The paper is organized as follows. Section 2 provides background on the characteristics of fiscal policy in SSA. Section 3 studies structural problems of fiscal management that are due to economic and political considerations. Section 4 considers fiscal policy in the light of structural adjustment problems, particularly with reference to the effect of fiscal policy on the real exchange rate. Section 5 discusses the role of fiscal policy in stabilization. Section 6 concludes.

2. Some Features of Fiscal Policy in SSA

This section describes some of the characteristics of fiscal policy in SSA as background to the rest of the paper. Table 2 gives some indication of size of the central government and basic sources of revenue in SSA. While the

average ratio of taxes to GDP among countries in SSA is typical of the developing world, these countries tend to rely more heavily on taxes on international trade and less heavily on nontax revenues (e.g., user fees and other cost recovery mechanisms) than their counterparts outside of Africa. Modifications of the tax system to reduce its distortionary effects are an important component of many structural adjustment programs currently underway in SSA.

A second important characteristic of fiscal policy in SSA is that it is in principle constrained by the lack of other, complementary policy instruments that can offset its undesireable side effects at low social cost. In particular, open market operations are typically unavailable due to the lack of a well-developed domestic market in government securities.[4] The authorities therefore have limited control over the inflationary or reserve-depleting impulse (depending on exchange rate regime) of fiscal deficits. Rather than enforce conservatism in the use of fiscal policy, however, this situation has often meant use of foreign borrowing and subsidiary policy instruments like the inflation tax and foreign exchange rationing as ways of maintaining unsustainable fiscal policies (Pinto, 1987). In this light, tighter policy constraints, rather than looser, have a certain virtue. The superior growth performance of the franc zone countries over the 1960s and 70s (Bhatia, 1985; Devarajan and de Melo, 1987b) raises exactly this possibility. In these countries, while the nominal exchange rate is lost as

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[4] While some countries have recently introduced Treasury bill auctions (e.g., Zambia: September, 1985; Zaire: April, 1983), these markets are extremely thin. Other policy instruments that affect the money supply, like reserve requirements, discount policy or credit ceilings, will remain more important in the medium term.

policy instrument, currency convertibility and limits on government borrowing from the union help impose fiscal discipline by removing or substantially limiting two of the more distortionary instruments for financing the deficit (exchange rationing and the inflation tax).[5]

A final important point is that the public sector in much of low-income Africa operates under structural constraints that reduce the ability of the fiscal balance to absorb external shocks. Though this problem is the focus of structural adjustment efforts by many countries, addressing it is a medium term prospect at best. In the interim, the "fragility" of the fiscal balance underscores the need to develop effective measures for expenditure control, as well as the need for adjustment packages that are flexible enough not to rely on good luck with respect to external developments. Sources of fragility are discussed in the next section.

3. Fragility of the Fiscal Balance in SSA

The purpose of this section is to give a precise interpretation to the notion of budgetary fragility alluded to at the end of the previous section.[6] Three sources of fragility seem important for African countries: sensitivity of the tax base to inflation, asymmetric response of current expenditures to

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[5] The Franc Zone (or CFA Zone) consists of two monetary unions whose currency (the CFA franc) is tied to the French franc, with convertibility guaranteed by the French Central Bank. Of the countries listed in footnote 3, only Cote d'Ivoire is in the CFA Zone. Outside of the Franc Zone, the only arrangement with similar features is the South African Currency Union (SACU), which ties the currencies of Swaziland and Lesotho to the South African rand.

[6] I am grateful to John Harris for a helpful conversation on the topic of this section.

revenue shocks, and sensitivity of productivity to real wages in the public sector.

Consider a country that begins in a steady state equilibrium with full employment and (for simplicity) zero output growth. The exchange rate is depreciating at a fixed rate of crawl (this may be zero) that is equal to the rate of growth of the nominal monetary base and nontradeables prices; foreign inflation is zero. We then have the following relationship for the steady state non-interest government deficit as a proportion of GDP (see the Appendix):

$$(1) \qquad d + (i^d dex - i^f) = \pi h + r,$$

where dex, f and r are the ratios of external debt, foreign reserves, and the inflow of aid, respectively (all measured at the official exchange rate) to GDP, d and h are the non-interest government deficit and the monetary base as a proportion of GDP, i^d and i are the interest rates on external debt and international reserves, respectively, and π is the domestic inflation rate. I have assumed that all external debt is held by the government, and that the country has its own Central Bank.[7]

Equation (1) emphasizes that sustainable deficits are limited by the ability of the government to extract finance via foreign aid and the inflation tax. Suppose now that the only financial asset available to the private

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[7] For countries in the Franc Zone or SACU, steady state inflation must be equal for all partners in the monetary union. Sustainable deficit levels would then depend on how overall seigniorage revenues for the union were distributed among the members.

sector is domestic money.[8] Let the domestic demand for real balances be a Cagan-style function of the expected rate of inflation:

$$h = \exp(-a\pi^e), \qquad a > 0. \tag{2}$$

Figure 1 shows the determination of steady state equilibrium. The curve OM incorporates money market clearing and convergence of expectations ($\pi^e = \pi$), both of which are characteristics of the steady state; it is the inflation-tax "Laffer curve" (Dornbusch and Fischer (1985)). Revenue from the inflation tax is maximized at h^*, where the elasticity of demand for the monetary base is unity. The DD schedule gives the total amount that must be financed through the inflation tax if growth in real money demand is zero (another requirement of the steady state). The diagram gives a quick check of sustainability of fiscal requirements; if DD lies above OM, the deficit cannot be financed in the steady state and must be financed in the short run through reserve decumulation, foreign borrowing, or increased aid.

If financing requirements are sustainable, there will be two steady state equilibria. The stability properties of these equilibria depend on how expectations about inflation are formed; Figure 2 shows the dynamics under both rational and adaptive expectations. In the rational expectations case, the high inflation, low real balances equilibrium is stable and the other unstable. In the adaptive expectations case, we use the following dynamics for expected inflation:

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[8] Pinto (1985, 1987) studies a similar models in which domestic residents also hold foreign currency obtained on the black market.

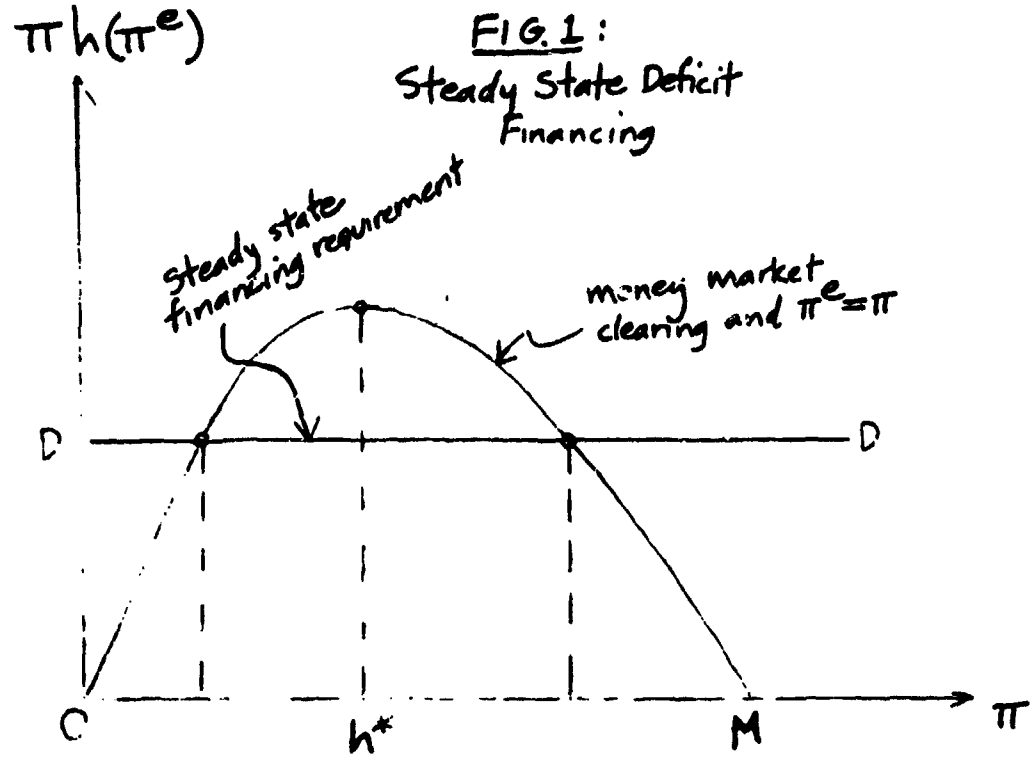
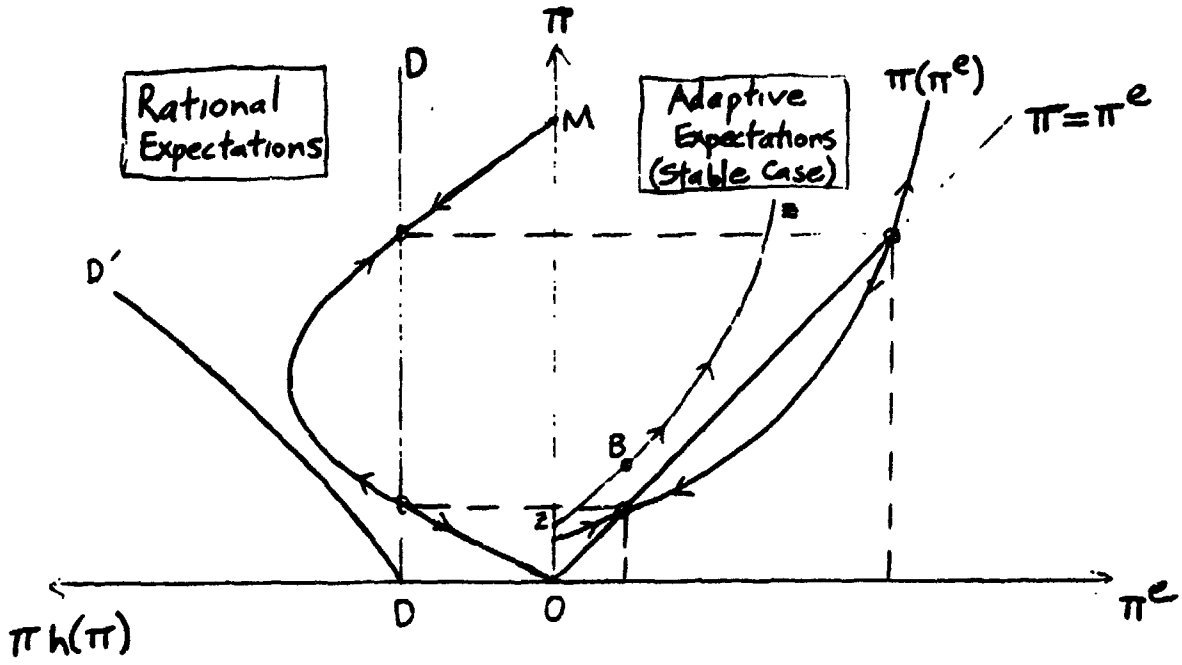


FIG. 1:
Steady State Deficit Financing

FIG. 2



(3) $$\pi^{e} = b(\pi - \pi^{e}), \qquad b > 0.$$

Figure 2 illustrates the case in which ab < 1, implying a relatively low rate of adaptation of expectations and/or a relatively low inflation elasticity of money demand. In this case, the rational expectations result is reversed: the low inflation equilibrium is the stable one.[9]

The long run unsustainability of the deficit may be temporarily masked in various ways, even if it is impossible to increase the ratio of external debt to GDP at the margin.[10] A government that finds it difficult to reduce the primary deficit may try to cover over the inflationary implications by reducing the rate of crawl of the exchange rate (or equivalently, by leaving the nominal exchange rate fixed as domestic inflation rises); as the exchange rate becomes increasingly overvalued, the government will have to tighten import and foreign exchange controls in order to protect reserves. This approach, widely followed in SSA since the mid-1970s, simultaneously tends to reduce the budgetary burden of the foreign debt and to transfer resources from exporters via the black market premium on foreign exchange (Pinto (1987) analyzes the latter point). But as long as the basic deficit remains unsustainable, these policies can only temporarily defer the need for adjustment; in fact, their palliative effect is gradually eroded as more

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[9] If ab > 1, the rational expectations stability results are restored. This analysis of the rational expectations and adaptive expectations case is contained in Dornbusch and Fischer (1985).

[10] Arrears and debt restructurings are both ways of increasing the debt/GDP ratio; they have been widely used in SSA. Brau (1986) lists 66 restructurings by 18 different countries in SSA between 1980 and 1985; in 1986, 23 countries in SSA had outstanding arrears (IMF, 1987, p.18).

economic activity is driven onto parallel markets.[11] In the interim, by distorting the sectoral allocation of resources and thus eroding the real tax base, they make the inevitable fiscal adjustment more severe.

A good example of this sequence of events is Madagascar in the period from 1977 to 1982. The 1976-77 boom in coffee prices helped finance a "massive public investment program" (Jeanneney, 1986) that was introduced along with a nationalization of large portions of the domestic industrial, distribution, and banking sectors. Expenditures rose substantially and remained high as the terms of trade collapsed. The resulting deterioration in the fiscal balance was financed in the short term by substantial increases in both foreign public debt and domestic credit; the latter grew at an average annual rate of 89 percent between 1977 and 1980, after growing at an average rate of 44 percent between 1975 and 1977. By 1980, the country had accumulated significant arrears and reserves had shrunk to less than a week of imports of goods and services. The money stock grew rapidly under the pressure of domestic credit creation; between 1979 and 1981, the annual growth of narrow money nearly tripled (from 10 to 28 percent). The domestic inflation rate followed suit (14 to 31 percent), and the real exchange rate

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[11] This gradual erosion of the effects of controls may have some benefits when the controls are lifted, since the required adjustment of prices to scarcity values may be smaller; for example, the stabilization program begun in April 1983 in Ghana involved a 2000% depreciation of the official exchange rate in the first two years. Over the same period, the inflation rate fell from 90% to 20%. Domestic prices of traded goods, in other words, apparently already incorporated the scarcity premium on foreign exchange. Note that the budget deficit as a proportion of GDP fell by 25% over the same period.

appreciated by nearly 20 percent in the two-year period.[12] By mid-1981, the government replaced the annual foreign exchange allocation system with a weekly system and tightened exchange controls in an attempt to protect reserves. These moves led to development of a substantial black market in foreign exchange (Jeanneney, 1986, p.184).

The following subsections (3.1 - 3.3) analyze more carefully some of the structural problems that tend to give rise to fiscal unsustainability in SSA.

3.1 Budgetary Fragility: The Tanzi Effect

Tanzi (1977) pointed out that if taxes are levied in nominal terms today and collected in nominal terms after some time lag, the real value of the taxes will have been eroded in the interim by any domestic inflation. Failure to index the tax system for collection lags of this sort can reduce the sustainable steady state level of expenditures. This is illustrated by the curves DD' and zz in Figure 2, which treat the real primary deficit, d = (g - t), as an increasing function of the inflation rate: $\dot{d} = d(\dot{P})$, $d' > 0$. The diagram shows a situation that is unsustainable precisely because of this effect. In the stable lagged adjustment case (curve zz), reliance on the inflation tax (by the early 1980s, reserves were exhausted in many SSA countries and access to international borrowing was zero on the margin) will lead to steadily rising inflation (e.g., the path starting at B).[13]

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[12] Narrow money is currency plus demand deposits of the banking system; the inflation rate is the change in the GDP deflator. All data are from the IMF International Financial Statistics Yearbook, 1987.

[13] As has been done in Brazil, indexation of the tax system to domestic prices will protect the real deficit from collection lags (while simultaneously removing the fiscal dividend provided by "bracket creep", which

Collection lags are one source of a Tanzi effect in SSA; in fact, Tanzi (1982) cites administrative difficulties as contributing to decreases in public sector revenues in the period 1974-80 for Ghana, Sudan, Tanzania and Zaire (though it is worth noting that these difficulties need not be directly related to macro policy). There are other sources of equivalent interactions between domestic inflation and the real deficit, however. One of the most common in SSA occurs when countries fix the nominal exchange rate in the face of high domestic inflation; the resulting real overvaluation tends to shrink the tax base by driving trade onto parallel markets (e.g., Ghana, Tanzania) and production into the nontradeables sector. The artificially low domestic currency prices of traded goods associated with overvaluation also mean a direct reduction of real revenues from ad valorem trade taxes. Destabilizing interactions are not confined to episodes of overvaluation; when specific, rather than ad valorem trade taxes are used, for example, the effective tax rate falls as the nominal exchange rate is devalued along with domestic inflation (e.g., Zaire).

Sierra Leone gives a good example of the interaction of tax revenues with accelerating inflation. Between 1978/79 and 1980/81, the share of tax revenues in GDP averaged 15.2 percent, only slightly below the average for all African countries (cf. Table 2). The central government deficit averaged 9.4 percent of GDP. Although much of this was directly financed by borrowing from the domestic banking sector, the nominal monetary base grew relatively slowly, averaging 18 percent a year from 1978 to 1981. The deficits were therefore ultimately financed externally, as the central bank borrowed to protect

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may dominate at low levels of inflation).

reserves in the face of a worsening current account performance.[14]

Table 3
Sierra Leone, selected years
1981/82 - 1986/87

	1978/79 -1980/81	81/82 (average)	83/84	85/86	1986, 2nd half
Tax Revenues as % of GDP	15.2	11.4	6.6	5.5	
Growth rate (%):					
Monetary Base*	18.0	30.3	37.5	83.4	
Consumer Prices	17.0	25.1	78.7	70.4	200+**

* The monetary base is defined as the sum of commercial bank reserves (including cash), currency outside banks, and net claims on the government by commercial banks. Average growth rates are computed from the end of the preceding period to the end of the final period (e.g., the 78/79-80/81 average uses end-1977 and end-1981 as endpoints).
** The CPI grew 74 percent between June and December, 1986. The implied annual inflation rate is over 200 percent.

SOURCE: World Bank; IMF, International Financial Statistics Yearbook, 1987.

Tax performance deteriorated in 1981/82, and increases in the monetary base began to be a more important source of finance. Domestic inflation accelerated, and tax revenues declined further as a percentage of GDP, setting up a Tanzi-style interaction: between 1981/82 and 1985/86, the domestic inflation rate rose from 25 to 70 percent per year and tax revenues fell from 11 to 5.5 percent of GDP. By the end of the period, the country was on a

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[14] The terms of trade moved strongly against Sierra Leone in the late 1970s and early 1980s: the prices of coffee, cocoa, and diamonds all collapsed, and the price of oil rose.

de-facto floating exchange rate regime, with deficit-induced increases in the nominal monetary base feeding directly through to depreciation of the leone on the parallel market. With a monetary base of roughly $50 million at parallel market rates and an inflation rate of 10 percent per month, virtually the entire average monthly deficit of $4.5 billion was being financed by seigniorage in the second half of 1986. Since the real monetary base was shrinking due to inflationary expectations, an increasing inflation rate was required to continue financing the same real deficit.

3.2 Budgetary Fragility: Asymmetric Expenditures Response

Most of the poor African countries rely heavily on the export of a few primary commodities. The prices of these commodities are dominated not by trend but by successive increases and decreases of uncertain duration. The revenue base in these countries therefore typically varies a great deal due to fluctuations in the terms of trade. This section discusses the problems this raises for the intertemporal allocation of government consumption (current expenditures). For the purposes of this section, the country should be thought of as specialized in the production of its export good. The effects described here are reinforced if expansionary fiscal policy tends to appreciate the real exchange rate (this mechanism is discussed in Section 4).

The experience of most countries suggests that controlling expenditure in the face of temporary revenue increases is extremely difficult. On the economic side, output growth in these economies is chronically constrained by shortages of saving and (at official exchange rates) foreign exchange. On the political side, the power base of the government leadership often depends on its ability to dispense economic favors (Lal (1987), Ndulu (1986), Nelson

(1974)). Revenue windfalls appear to represent loosenings in these key macroeconomic and political constraints. Tanzi (1982) cites limited expenditure control as an important factor contributing to fiscal imbalances in Cote d'Ivoire, Kenya, Malawi, Sudan, Zaire and Zambia.

For the same reasons, reducing expenditures when revenues fall has proven extremely difficult.[15] Countries that have handled commodity booms well have tended to follow policies aimed at building wealth and liquidity, thereby allowing increases in current consumption without tightening future constraints. For many countries, however, the tendency for expenditures to expand rapidly with revenue booms and to contract only slowly with revenue declines has meant a tendency for deficits to ratchet upwards over time (cf. Wheeler, 1984). This process can continue as long as external financing is available; its costs become apparent in the contractionary adjustment that is ultimately required.

If the duration of commodity price fluctuations were known, economic theory would indicate increasing assets during booms and depleting them during bust periods. Only permanent movements in real commodity prices would change the country's real wealth and therefore indicate changes in the sustainable standard of living. The actual country experience, however (e.g., Kenya and Madagascar during the 1976-77 coffee boom, Cote d'Ivoire and Ghana during the 1975-77 cocoa and coffee boom, Zambia during the sustained copper boom of 1965-74), is full of examples where windfall revenue gains led to large

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[15] In a careful study of stabilization programs (including Ghana, Kenya and Zambia, as well as countries outside of Africa) Nelson (1974) concludes that governments find cutting deficits to be the most difficult part of the programs.

increases in government expenditures (in the Zambian case, copper financed a sustained expansion of the public sector). This is most damaging when the boom produces an increase in current, rather than capital, government expenditures. Current expenditures (consumer subsidies, subsidies to parastatals, public sector job creation) create "entitlements" to public sector financial support that are extremely difficult to cut once the necessary revenue base has disappeared (Lal, 1987). Slow response of current expenditures to revenue declines can then create a situation of a chronic government deficit. sustained appreciation of the real exchange rate (see Section 4), and an increasing foreign debt.

In theory, government expenditure increases are not a problem if they are capital expenditures; the income from the acquired domestic asset can then be used to distribute the benefits of the windfall over the future. In many cases, capital expenditures indeed rose more dramatically than current expenditures (e.g., The Sudan (Jaycox. et al., 1986), Madagascar (Jeanneney, 1986), Cote D'Ivoire (see below)). Experience suggests at least four problems here, however. The first and most important is that the domestic capital stock is illiquid. Investment projects can be stopped in midstream, but capital can rarely converted into consumption when the terms of trade collapse.[16]

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[16] Presumably, the domestic capital stock could be sold to foreigners; however, (1) this may be unattractive on political grounds; (2) this is impossible for social overhead capital like transport infrastructure or schools; and (3) in any case, assets liquidated in this fashion are likely to be sold at a substantial discount (an example is Mexican oil, which was sold to the United States at well under the market value in connection with the Mexican financing crisis of 1982). These problems would not be decisive if the country could borrow against illiquid domestic capital, but this is not possible for most countries in SSA.

The second problem is that capital expenditures often imply a commitment to future current expenditures (e.g., expenditures on schools or public transport, or subsidies to parastatals). They therefore may build in the asymmetric expenditure response described above. Third, the social marginal efficiency of investment is likely to fall rapidly when capital expenditures rise substantially in a short period of time, due to inadequate planning and coordination. The final problem, in historical perspective, is that the overall performance of public sector investment in low-income Africa has been, with few exceptions, extremely poor (World Bank, 1981; Jaycox, et al., 1986). This is especially true when the investment has meant expansion of the scope of public sector activities in product and resource markets (Ndulu, 1986), an observation that is corroborated by the experience of oil exporting countries in handling windfall revenues in the 1970s (Gelb, 1986).

Figure 3 gives an example of the asymmetric expenditure response phenomenon from Cote d'Ivoire. Public expenditures as a fraction of GDP rose gradually from 1970 to 1975, at a time when the terms of trade was deteriorating by 40 percent; by 1976, the public sector deficit was 7 percent of GDP. The 1975-77 coffee and cocoa boom led to an extreme short-run terms of trade improvement (these commodities represent half of Cote d'Ivoire's export earnings).[17] Revenues from the boom turned the fiscal balance to surplus in 1977, but this was followed by a sharp increase in expenditures even as the terms of trade collapsed back to the 1975 level. The public sector deficit rose steadily, to 10 percent of GDP in 1982, and external debt rose rapidly (the debt service ratio rose from 9.1 percent in 1975 to 33.6

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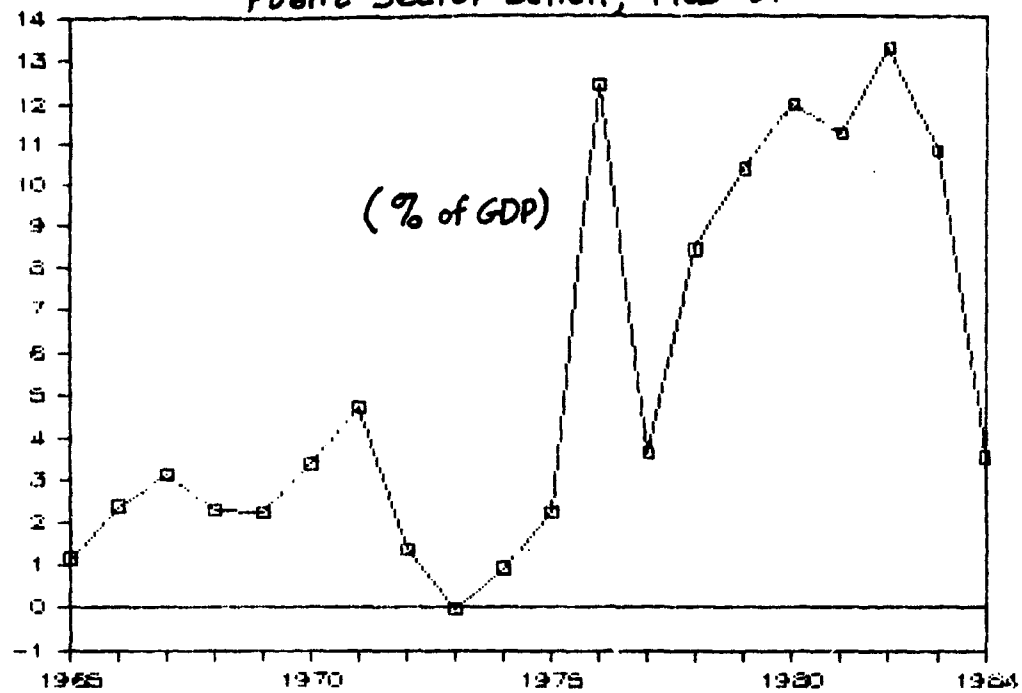
[17] The discussion here draws on Devarajan and de Melo (1987b).

FIG 3

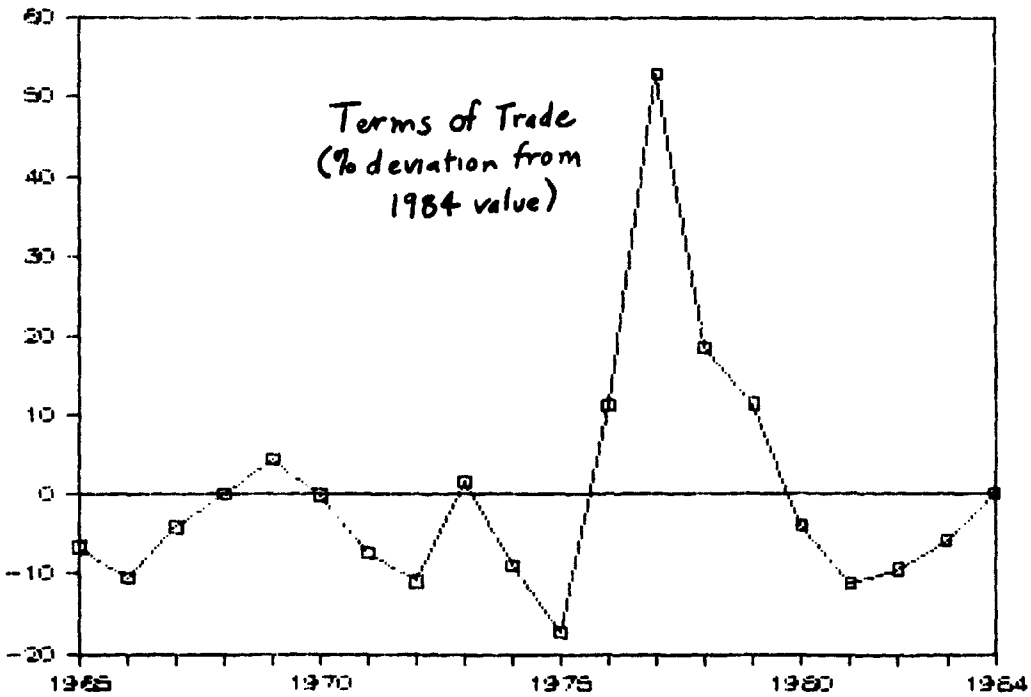
Côte d'Ivoire
Public Sector Deficit, 1965-84



Source: World Bank.

FIG 3
cont'd

Côte d'Ivoire
Terms of Trade, 1965-84

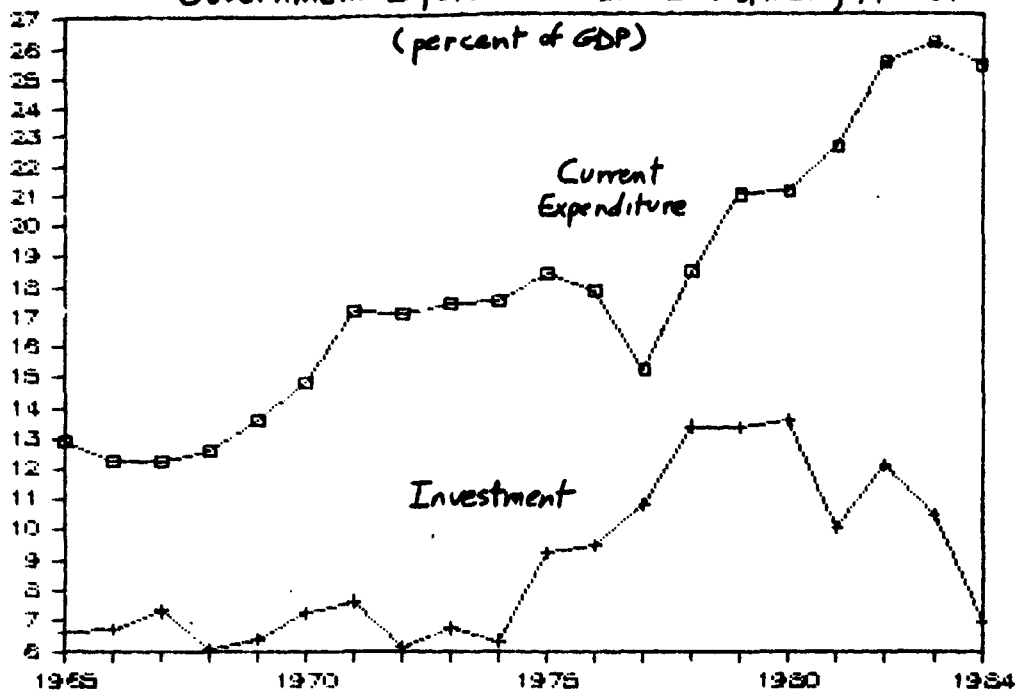


Source: World Bank.

FIG 3
cont'd

Côte d'Ivoire

Government Expenditures and Investment, 1965-84

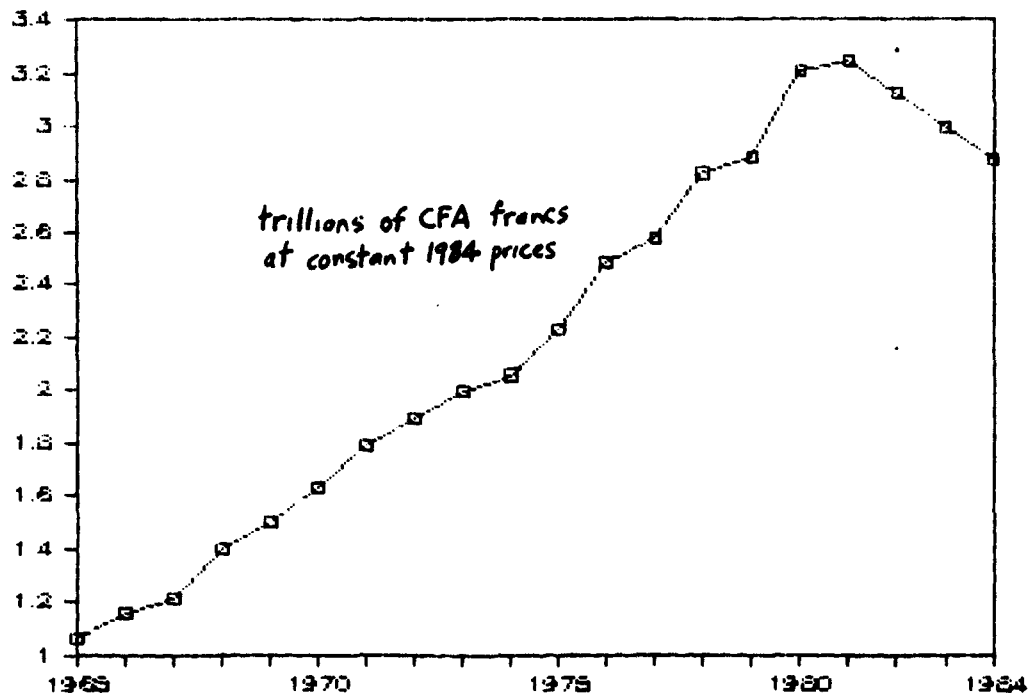


Source: World Bank

FIG 3
cont'd

Côte d'Ivoire

Real GDP, 1965-85



Source: World Bank

percent in 1982). The government entered a stabilization- cum-structural adjustment program in 1981, achieving a substantial turn-around in the fiscal deficit after 1982. Stabilization of the fiscal and external accounts was extremely costly: real growth stagnated in 1981 and then fell for three successive years.

Problems associated with asymmetric expenditure adjustment do not appear to be confined to the public sector in low-income Africa. Using data on 25 countries in SSA between 1970 and 1980, Wheeler (1984) finds that rea. GDP tends to grow significantly more slowly on average in countries with (1) low "ability to retrench", in the sense that imports respond less to declines in export revenues than to increases in export revenues, or (2) high "habit formation" in imports of capital goods and non-food consumer goods (where high habit formation means high dependence of these imports on their lagged values).[18] Jaycox, et al. (1986, p.57) identify inability to reduce domestic consumption levels downward after commodity booms as one of the key common denominators in the development of the debt problem in Eastern and Southern Africa.

There are relatively few examples of successful handling of large commodity price fluctuations in low-income Africa. The main lesson for fiscal policy is the benefits of conservatism (Tanzi, 1982). In the two consistently successful cases, Botswana (beef and diamonds) and Cameroon (cocoa, coffee, and oil), governments exercised expenditure restraint in periods of commodity

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[18] Note that Wheeler's measures refer to total imports and exports, not public sector expenditures and revenues. Interestingly, Wheeler's results suggested a relatively high "ability to retrench" for Cote d'Ivoire (6th in a sample of 29 countries). On the other hand, Cote d'Ivoire also showed relatively high persistence in imports of non-food consumer goods and above-median persistence in capital goods imports (Wheeler, 1984).

boom, and a substantial portion of revenues were used to increase the liquid net foreign assets of the government. In Botswana, international reserves have grown steadily since the initiation of diamond production in the Jwaneng mine in 1983; they now stand at over two years of imports. In Cameroon, up to 75 percent of oil revenues from the post-1978 boom were saved abroad, partly in a retirement of part of government debt (Devarajan and de Melo, 1987b). In both cases, these countries entered the mid-1980s with low debt burdens, sustainable configurations of government and private expenditure, and an ability to confront potential future terms of trade deteriorations.

3.3 Budgetary Fragility: Wages and Productivity

Sections 3.1 and 3.2 both suggest that expenditure control is important for budgetary stability in SSA. This section argues that the way in which expenditures are altered may make a difference to the success of a stabilization effort.

In many countries, fiscal stabilization means attempting to cut the public sector wage bill.[19] Given the political difficulty of cutting public sector employment, this is often done by holding the growth of public sector wages below the inflation rate, and thus "inflating away" the real public sector wage. In some countries, this process has driven public sector real wages down well below subsistence. In Zaire, for example, a month's average public sector salary in July, 1984 would buy enough manioc (a staple) to feed the average family for a month; in Ghana, a middle-level public sector salary

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[19] For example, in a sample of 94 IMF-supported ajustment programs undertaken during the period 1980-84 (not restricted to Africa), 38% included limits on the growth of public sector wages and salaries (IMF, 1986, p.14).

in 1985 was at the poverty line for the average household.

Evidence is accumulating that reductions in public sector real wages may make a limited contribution to fiscal stabilization at best.[20] The problem is that driving down real public sector wages may reduce public sector productivity in a variety of ways. Figures 4-6 give a simple example that illustrates the possible implications of this point. Suppose that public sector employees divide their labor time between the government job and the informal labor market (e.g., driving a taxi or cultivating crops) in order to maximize their expected real income. Suppose further that while it is politically difficult to fire a public servant on budgetary grounds, it is easier to do so if there is direct evidence that he has been "shirking" the job. If a fraction s of labor time is spent on the public sector job, and the probability of being "caught" (and therefore losing the government job) is q(s), with $q'(s) < 0$ and $q''(s) > 0$, the worker's expected income is

$$(4) \qquad (1 - s)w_{pri} + p(s)w_{pub}$$

where w_{pri} is the private sector real wage, w_{pub} is the government real wage, and $p(s) = (1-q(s))$ is the probability of retaining the government job. The optimal choice of s satisfies $p'(s) = 1/\alpha$, where $\alpha = w_{pub}/w_{pri}$ is the public

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[20] This evidence is still anecdotal. In Tanzania, for example, a policy of wage restraint drove the real public sector wage down by 12 percent per year between 1975 and 1982. Since public sector employment grew by 10% a year over the same period, this meant a steady reduction in the real wage bill. Over the same period, however, real revenues dropped even more rapidly than recurrent expenditures (this may have been partly due to shifts in the composition of taxes away from export taxes on incentive grounds). The government therefore had limited success in stabilizing the budget after the large temporary increase in military expenditures in 1978; the reductions that did occur required large cuts in the development budget. More research on the Tanzanian and other cases would be extremely useful.

sector real wage premium. Figure 4 gives a configuration of p(s) in which the elasticity of p(s) falls rapidly, then slowly, then rapidly again, as s approaches 1. This implies that the allocation of time to the government job, $s(\alpha)$, has the shape given in Figure 5. For high levels of α, "effort" falls slowly with reductions in the premium. As the premium falls further, however, it becomes worthwhile on the margin to switch more rapidly into informal sector work. At low levels of the premium, effort is already low and falls slowly to zero as the premium approaches zero.[21]

"Effective" labor in the public sector is simply $E = s(\alpha)L$, where L is public sector employment. Assuming that revenue, R, is a function of effective labor (it may also depend on government expenditures, G), the government deficit is given by

$$D(\alpha, L) = G + w_{pri}L - R(E). \tag{5}$$

To capture the notion of increasing but diminishing returns to effective labor, I assume that government revenues, R, are an increasing, concave function of effective labor input: $R_E > 0$, $R_{EE} < 0$. For convenience, I will assume that other government expenditures, G, are unaffected by changes in s; in reality, reductions in effective public sector labor input are likely to

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[21] Since the worker can choose voluntarily to quit the government job, the optimal chice of intensity, s, should maximize expected income in (4) subject to the restriction that this expected income exceed w_{pri}. This does not change the analysis, although some form of non-wage compensation from the government job, with real value $v > 0$, must be introduced to rationalize the empirical observation of individuals retaining their jobs even when α has fallen below 1. In this case, the worker would choose s to maximize $V = (1 - s)w_{pri} + p(s)(w_{pub} + v)$, subject to $V > w_{pri}$. The optimal chioce of s, $s^*(\alpha, v)$, would look like $s(\alpha)$ in Figure 5 for s above some cutoff value α_c that would be a decreasing function of v; below α_c, s^* would be zero. The relevant range for the analysis would be above α_c.

FIG 4

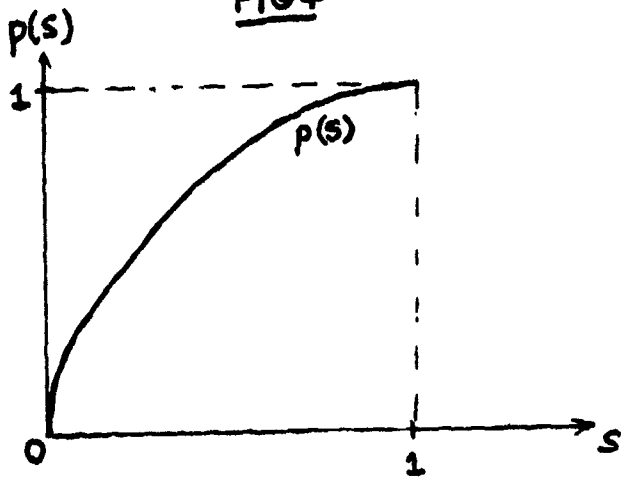


FIG 5

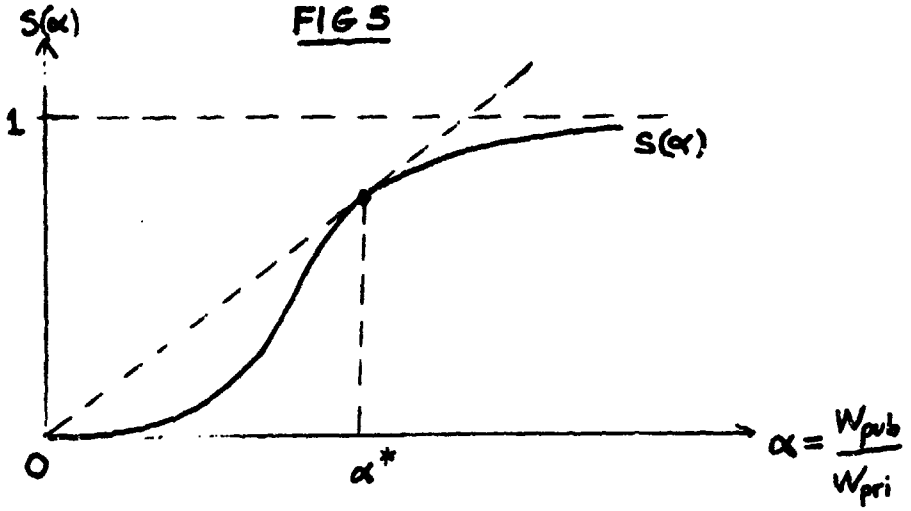
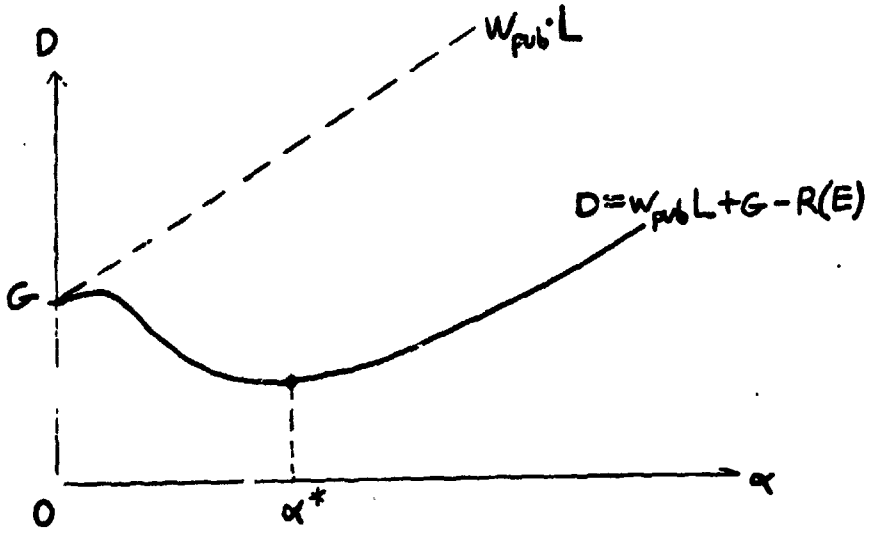


FIG 6



put upward pressure on G by raising the cost of producing a given level of real government output (for example, by requiring increased inputs of costly outside consultants to perform managerial and other functions). This mechanism would reinforce the revenue effect described here.

Figure 6 shows the deficit as a function of the premium, given the value of the private real wage and the level of public sector employment. The diagram suggests that there is an "optimal" level of the premium, in the sense of one that minimizes the deficit given the level of public sector employment. In the neighborhood of the deficit-minimizing premium, the deficit/public sector wage relationship is characterized by a reverse "Laffer curve". To the left of α^*, reductions in the premium have a perverse effect on the deficit: they drive down revenue productivity sufficiently to offset the saving from the reduced wage bill.

This analysis raises the broader question of "how" to help stabilize the budget by reducing the wage bill. Figure 7 shows that this depends very much on the initial levels of employment and the public sector premium. The family of rectangular hyperbolas in the diagram give values of α and L that yield constant government wage bills. A policy of reducing the public sector wage bill means moving to a lower hyperbola. The deficit reaches a minimum value of D^* at (α^*, L^*).[22] I assume that the deficit is a strictly concave function of α and L in the neighborhood of this point, so that the optimum is locally unique. The contours D_1 and D_2 correspond to combinations of α and L that yield successively higher deficit levels D_1 and D_2, respectively ($D_2 > D_1 > D^*$).

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[22] In the model just described, the optimum is characterized by the condition that the elasiticity of effective labor with respect to the wage is unity. This occurs at w^* (independently of L) in Figure 2.

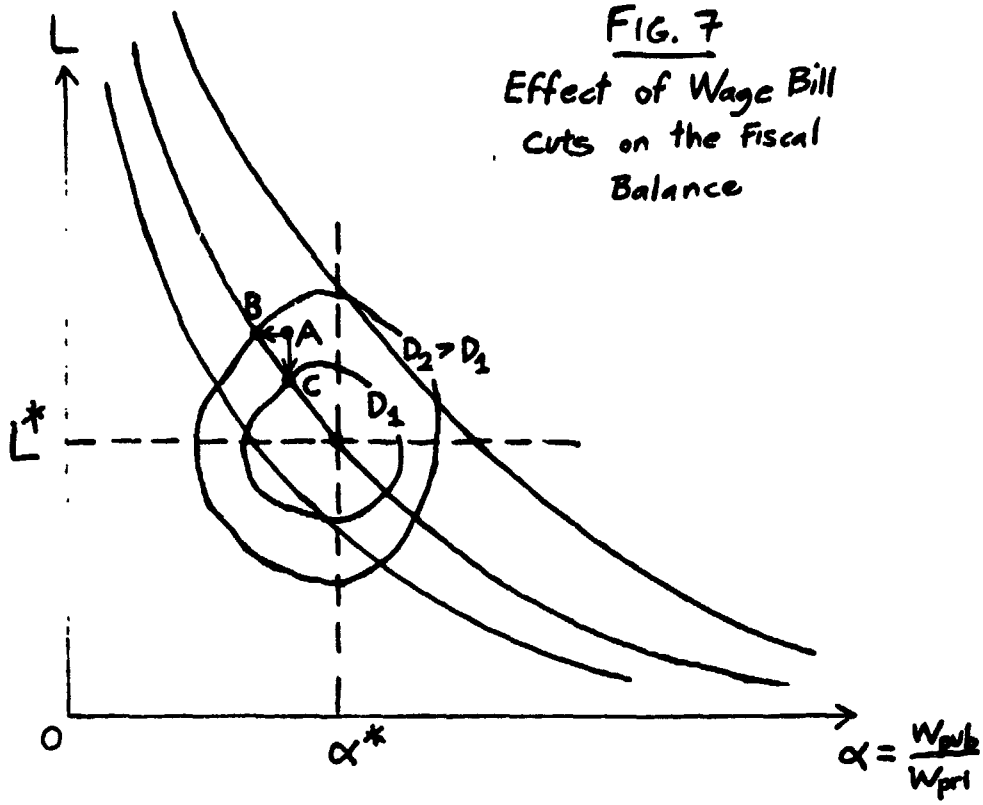

FIG. 7
Effect of Wage Bill cuts on the Fiscal Balance

Now consider starting at a point like A and trying to reduce the deficit by reducing the wage bill. At A, public sector employment is too high and the real public sector wage (relatively) too low for the optimum; this position was certainly reached, for example, in Ghana in the late 1970s and early 1980s.[23] In this case, it is clear that reductions in the wage bill through erosion of the public sector premium will increase the deficit (point B in the diagram); we are on the wrong side of the wage-premium Laffer curve. In order for a reduction in the wage bill to reduce the deficit, it must be done through a shrinkage of public sector employment (a movement to a point like C).

Although we have assumed zero growth in real GDP for simplicity, it is clearly not the absolute employment level, but the level relative to the real tax base that matters for public sector productivity. A movement downwards in Figure 7 can therefore be achieved simply by restricting the growth rate of public sector employment relative to overall real income growth (e.g., by holding employment constant as real GDP rises). This task should be politically easier than reducing the work force directly. One way a reduction in employment growth might be achieved is by removing implicit or explicit guarantees of employment for graduates of universities and government training institutions, as is being done in Kenya (Republic of Kenya, 1986, p.33).

The model just outlined suggests a number of lessons and a caveat or two for the design of fiscal stabilization schemes. First, it is clear that public sector wage bill reductions may have unintended effects if there is a wage/productivity link in the public sector. Second, since such links operate

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[23] Between 1975 and 1982, total civil service employment in Ghana grew by 14 percent a year on average. Over that same period, total real expenditures on personal emoluments fell at a rate of 15 percent a year.

through labor supply decisions, the relevant wage concept is the after-tax wage. This means that tax policy may be a useful instrument.[24] Finally, if wage/productivity links are important, the appropriate fiscal response requires an understanding of the exact nature of the link. Our model emphasizes the relative return to undifferentiated "labor" in the public and informal private sectors. An alternative mechanism that has been identified in a number of countries is compression of the wage structure within the public sector. In Ghana, for example, pre-tax wage differentials between the lowest and highest-paid civil servants had shrunk to 2:1 by 1985 (a typical ratio for other developing countries would be well over 6:1); the comparable ratio for the private sector was 10:1. Thus while real wages at the lower end of the salary spectrum had risen in real terms since 1980, the real salary of a Permanent Secretary had fallen to 10% of its 1977 level.

Compression of wage differentials has two important implications. First, it implies that migration of public sector labor into the private sector (as outlined in the model above) and abroad may be a more severe problem at the higher levels of the civil service, so that the average quality of government labor declines over time (e.g., Republic of Kenya, 1986, p.32). Second, it adds another dimension to the efficiency wage issue. As long as promotions within the public service are to some degree contingent on actual productivity, work intensity will respond not only to the average public sector premium but also to the prospect of higher future salaries within the

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[24] Although the average tax rate is all that matters for computing the net wage bill, it is marginal tax rates that are likely to matter for productivity. Note also that it is really after-tax compensation that matters, so policy with respect to non-wage forms of compensation is also important.

public sector. In this case, "de-compressing" the public sector wage scale by raising salaries at the high end may not be as destabilizing as it seems; part of the wage increase can be paid for by increased productivity of the most able (and therefore upwardly mobile) workers at the lower end of the pay scale.

A particular caveat applies when productivity is to be increased by wage scale decompression: since the productivity increases are based on the prospect of future rewards, the government's commitment to a revised pay scale must be visible and credible. A half-hearted gesture in the direction of increased salary differentials will fail to increase productivity. Skepticism in this case may be self-validating: limited progress on productivity will increase the pressure for the authorities to renege on the revised salary scale.[25]

There are few countries, as yet, in which improvement and decompression of the public sector wage scale has been an explicit goal of structural adjustment policy. Ghana is one one of the pioneers in this respect: the first set of public sector salary adjustments, in late 1984 and 1985, affected average salaries by raising salaries at the lower end; salary measures implemented in 1986 then began to address the compression problem by increasing the maximum differential to 5.7:1 from 2.3:1. The effects of these measures have not yet been fully assessed.

The problem of falling public sector productivity is cited widely enough in the literature on SSA to suggest that it is endemic. The "efficiency wage"

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[25] In other words, there may be more than one equilibrium outcome to the policy, depending on credibility. This phenomenon is an important lesson of the literature on the Southern Cone stabilization programs.

phenomenon outlined here is one source of the problem, but there are others.[26] This suggests that there would be high payoff to studies by countries and donor agencies of the technology of government activity. More broadly, for countries in stabilization or structural adjustment programs, the issue is not whether to reduce the fiscal deficit or the scope of public sector activities, but how this is best to be done.

4. Fiscal Policy and Structural Adjustment

A basic goal of structural adjustment in SSA is reducing the anti-trade, anti-agriculture bias in economic policy built up over the 1970s. Fiscal policy fits directly into this discussion at three points. First, the liberalization component of structural adjustment programs may have destabilizing effects on the fiscal balance in the short run. This heightens the need for fiscal discipline. Second, the large share of the government in total absorption means that its expenditure patterns have a strong influence on the relative price of raded and nontraded goods, i.e., the real exchange rate. This effect of fiscal policy is important because the promotion of traded goods production is a policy goal on such grounds as restoring creditworthiness with official and private lenders and capturing "learning by

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[26] For example, falling real wages may increase the temptation for corruption by government officials. If such corruption takes the form of accepting bribes in return for a reduction of tax liability, the deficit may again move perversely with real wage cuts. This is strengthened if corrupt practices require an input of time from the official. An interesting case is where falling real wages encourage public sector officials who are administering official controls (e.g., allocating import licenses) to accept bribes. Here, the corruption simply involves a transfer of rents from the private sector to the public official, with no budgetary implications; and in fact, the institution of a "market" for the rent may have positive benefits in terms of allocative efficiency.

doing" externalities in the export sector (van Wijnbergen, 1986). Fiscal policy has a role in whether, and how rapidly, the desired sectoral reallocation of resources is achieved. Finally, reducing the scope of public sector activities and focusing these activities in areas of high social return is itself a goal of structural adjustment programs.

4.1 Fiscal Policy and the Real Exchange Rate

For a country taking world prices of imports and exports as given, increases in domestic expenditure relative to income tend to put upward pressure on the price of nontradeable goods relative to tradeables.[27] This is the message of a long line of work in the tradition of the Australian dependent economy model (e.g., Dornbusch (1980)). Since expansionary fiscal policy lowers net domestic saving unless private saving offsets the fall in public sector saving, it is often associated with real appreciation. In fact, even if government deficits are not financed externally, a substitution of public for private absorption may put pressure on the real exchange rate if the composition of government expenditures is weighted more heavily towards nontraded goods.

None of the real exchange rate movements just described are harmful if they occur in the context of sustainable macroeconomic policies. A future real depreciation would be called for, for example, if external borrowing were used to smooth consumption in the current period, or to undertake investment

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[27] More generally, expansions in domestic expenditure will tend to raise the relative price of any good that is consumed on the margin and is imperfectly substitutable with tradeable goods (see Devarajan and de Melo, 1987).

in the nontraded goods sector; but in either case, the real depreciation would generate the increase in traded goods for debt service without any special need for accompanying fiscal policy.

For much of low-income Africa, however, the appreciation of real exchange rates that took place in the late 1970s and early 1980s was the counterpart to unsustainable economic policies. In this context, fiscal policy may have a role to play in facilitating real devaluation. The resulting move of resources into the production of tradeables can shorten the contractionary phase of stabilization and adjustment programs. Fiscal policy can work here either by helping to validate a nominal devaluation (Khan and Lizondo, 1987) or, especially if the nominal exchange rate is not available as a policy tool (as in the franc zone) in accelerating the adjustment of relative prices (Krumm, 1987; Devarajan and de Melo, 1987).

4.2 Aid and the Real Exchange Rate

van Wijnbergen (1987) argues that aid inflows, like capital inflows or terms of trade windfalls, can increase the demand for nontraded goods and therefore appreciate the real exchange rate. This relative price movement would be appropriate if changes in aid levels were permanent and there were no distortions in the economy. In this case, resources should move into the nontraded goods sector in order to translate the economy's permanent increase in command over traded goods into increased consumption of both traded and nontraded goods. If the aid windfall is temporary, however, and the private sector does not operate in a perfect capital market, then the resulting real appreciation may (1) lead to suboptimal investment in the traded goods sector, and/or (2) worsen the social cost of existing intersectoral distortions (cf.

Neary and van Wijnbergen, 1986). One distortion of particular importance to low-income Africa is the possibility that the export sector may generate positive externalities either for the rest of the economy or for future production in the export sector ("learning by doing"). A distortion of this type would call for intervention in the form of an export subsidy regardless of the level of aid inflows. If capital markets are imperfect, however, the level of the optimal subsidy is a positive function of the level of temporary aid or other foreign capital inflows (van Wijnbergen, 1986).

A second, related negative effect of aid inflows has been to help support fiscal policies that were otherwise unsustainable (Ndulu, 1986).[28] To the degree that postponement of adjustment makes the ultimate adjustment more difficult, intertemporal welfare may be lowered; more importantly, the uncertain duration of policies supported by widespread controls and external borrowing can increase uncertainty enough to paralyze private sector investment.

van Wijnbergen (1986) provides suggestive empirical evidence in the form of equations linking the real exchange rate to aid inflows and such other "structural determinants" as total factor supplies (proxied by real GDP), differential technological progress, and nonconcessional borrowing inflows. In separate time-series regressions for Egypt and five low-income countries in SSA, elasticities of the real exchange rate with respect to current or lagged

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[28] Temporary aid inflows are analytically similar to commodity booms when the booming sector is an enclave that does not draw resources from the rest of the economy (e.g., diamonds in Botswana). The discussion of asymmetric expenditure response to commodity booms (Section 3.2) is therefore relevant here. There may be examples, in other words, where aid inflows actually precipitated unsustainable fiscal policies, rather than simply helping sustain them in the short run. I am not aware of any evidence on this issue in the literature.

aid disbursements fall between .17 and .70 and are typically statistically significant.[29] While these results should be interpreted cautiously, given simultaneity problems (real exchange rate appreciation increases the need for aid by worsening export performance and reducing real incomes), they suggest that the phenomenon may be quantitatively important in SSA.

To observe that aid inflows may appreciate the real exchange rate is not to say that the shadow value of temporary aid is negative. Aid inflows can play a crucial role on the supply side of the economy by loosening import constraints and increasing capacity utilization in both the traded and the nontraded goods sector. With regard to sectoral resource allocation, to the degree that the supply effects of "lumpy" public sector infrastructural investments are biased towards traded goods (e.g., road improvements for transport of agricultural goods), aid flows that make these investments possible can hasten the shift of resources out of nontradeables. It does suggest, however, that both recipients and donors face a serious "aid management" problem. While continued, and even increased aid is essential, both groups should treat aid flows as temporary and rehabilitative, and confront the necessary implication that availability of these flows does not lessen the need for structural adjustment.[30]

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[29] The five SSA countries are Ghana, Kenya, Malawi, Sierra Leone, and Tanzania.

[30] van Wijnbergen (1986) suggests that donors should include conditionality with respect to removal of anti-trade bias as a way of counteracting the effect of aid on sectoral allocation of resources. This policy would be complementary to targeting aid towards removing supply constraints and signalling clearly to the private sector the temporary nature of aid so as to facilitate medium-run decision making.

5. Fiscal Policy and Stabilization

Balance of payments stabilization problems have been a constant theme for countries in SSA since the mid-1970s. Two lessons for fiscal policy seem important. The first is the importance of control over the public sector deficit. The second is the importance of redirecting government expenditures so as to shift the burden of stabilization away from aggregate demand contraction. We discuss these in turn.

Deficits cannot be financed externally in crisis periods, and domestic borrowing is in any case from the banking system. Public sector deficits therefore mean increases in domestic credit and the monetary base. Since stabilization of prices (including the exchange rate) and/or the balance of payments requires control over the growth of the nominal monetary base relative to the demand for it, controlling the public sector deficit is a potentially important input. The basic insight here is simply the monetary approach to the balance of payments (or the exchange rate), and in fact control of government expenditures and the overall deficit are standard features of IMF stabilization packages applied throughout the developing world.[31] A number of observations are suggested by the particulars of the SSA case.

First, much attention has been devoted to the need for countries in SSA to move towards more market-related exchange rates (e.g., World Bank, 1981). In practice, this has meant experimentation with foreign exchange auctions and

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[31] A survey of 94 Fund adjustment programs supported by Stand-By Arrangements or the Extended Fund Facility between 1980 and 1984 found that 91 percent included restraint of government current expenditure. Limits on bank credit to the central government were included in 53 percent of the programs, and measures to improve or reform tax administration in 55 percent (IMF, 1986).

other devices for reducing disparities between official and parallel exchange rates. Any tendency, however, to view exchange rate flexibility as a substitute for fiscal discipline in stabilization policy runs the risk that deficit-induced money growth will lead to an intolerable degree of depreciation and thus terminate the program. The importance of accompanying, or even prior, fiscal control is amply illustrated by the relative success of Ghana and the difficulties encountered by Zambia and Sierra Leone in adopting more flexible exchange rate regimes as part of stabilization efforts.[32]

Second, as the data in Table 1 suggest, countries in SSA have few options other than contraction for achieving stabilization (Nelson (1974)). In particular, these countries have limited capacity to stabilize their external accounts in the short run by increasing the supply of tradeable goods. Thus while economic contraction is never the stated goal of fiscal restraint, it has in many cases been the primary mechanism for actually achieving stabilization.

This brings us to the second lesson, which is the importance of redirecting government expenditures so as to maximize the contribution of supply increases to stabilization. In a number of countries (e.g., Tanzania, Zambia), infrastructural conditions are poor enough to constitute an important constraint on the supply of tradeables, particularly in transport- intensive sectors like agriculture. In these countries, there may be considerable scope for the government to lower the social cost of stabilization by focusing on

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[32] The success of Zaire in sustaining moving to a relatively stable market-determined exchange rate is also a case in point; a fiscal austerity program was already in place nine months before the initial devaluation (Sept. 1983) and move to a dual exchange rate regime; the deficit fell from 10% to 4% of GDP in 1983. The exchange rate was successfully unified in February of 1984.

the elimination of distribution and supply bottlenecks.

Finally, the fragility of the fiscal balance (Section 3.2) suggests that fiscal discipline may be important in dealing with the potentially destabilizing effects of structural adjustment programs. As Lal puts it, drawing on the experience with liberalization-cum-stabilization programs in the Southern Cone and Sri Lanka, "prior establishment of fiscal control is the 'sine qua non' of a sustainable liberalization attempt" (1987, p.284). Given the importance of trade taxes in SSA (cf. Table 2), a reduction in government intervention in traded goods markets may involve a substantial shock to the fiscal balance.[33]

6. Conclusions

Although judgements are difficult to make given the variety and complexity of fiscal policy problems in low-income Africa, this preliminary review suggests the following conclusions:

1. Various factors combine to make the fiscal balance in many low-income African countries sensitive to external shocks. Addressing these factors fully is a medium term prospect that will require study of the "technology" of the public sector in specific countries.

2. Public sector labor productivity is an endemic problem in SSA. This is

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[33] The impact on revenues is moderated to some degree if currency devaluation is simultaneously taking place, since the depreciation of the domestic currency raises the domestic currency value of trade flows; a devaluation will also increase the value of debt service and expenditures on traded goods, however.

almost certainly related to falling real public sector wages and wage differentials, which have reduced the return to public sector job performance relative to private sector work or to on-the-job corruption or moonlighting. In some cases, public sector wages have fallen so low that the positive productivity effect of an increase would be enough actually to reduce the overall deficit.

3. Commodity booms have been a mixed blessing for countries in SSA. The record suggests that public sector investment is a poor substitute for the more conservative strategy of increasing liquid foreign assets in response to revenue booms.

4. Aid donors and recipients in SSA face a serious "aid management" problem. Aid inflows can certainly help sustain, or even encourage, overly expansive fiscal policies. There is some evidence that aid inflows appreciate the real exchange rate. Concentrating on the rehabilitative and infrastructural role of aid will maximize the contribution of these flows to structural adjustment; there may also be room for conditionality in the form of removal of anti-trade policies so as to reduce the distortionary cost of aid inflows.

5. Prior control of fiscal deficits is important to the success of stabilization programs. This lesson has been particularly dramatic in recent programs involving movements to market-oriented exchange rates.

6. Realignment of government expenditures towards provision of inputs that are complementary to private sector inputs (e.g., towards rehabilitation of

transport services) has an important role to play in shortening and softening the contractionary phase of stabilization/structural adjustment programs.

7. Fiscal policy was an important factor contributing to the real appreciations that occurred since the mid-1970s; by the same token, it has a role to play in facilitating the real depreciation that is required for adjustment. In particular, nominal devaluations will not produce real devaluations in the medium run without fiscal adjustment. Fiscal policy is particularly important for the real exchange rate in the Franc Zone given the absence of the nominal exchange rate instrument.

Table 1

	Real GDP Growth		Export Share of GDP		Growth of Real GDI*	
	1965-80	1980-85	1965-80	1980-85	1965-80	1980-85
SSA**	5.3	-0.7	25	21	9.0	-11.4
DCs***	6.0	3.3	13	21	8.2	0.8

	Index of Food Production per Capita (79-81=100)	Percent Share of Food in Merchandise Imports		Gross International Reserves (months of imports)
	1983-85	1965	1985	1985
SSA**	107	15	18	1.7
DCs***	116	16	11	3.5

	External Debt/GDP Ratio		Debt Service as Percentage of: Exports of Goods and Services		GNP	
	1970	1985	1970	1985	1970	1985
SSA**	14.2	39.1	5.3	21.5	1.2	4.8
DCs***	13.5	31.5	11.2	19.7	1.5	4.3

* GDI denotes Gross Domestic Investment.
** Sub-Saharan Africa. These numbers are weighted averages, usually weighted by GDP. Since Nigeria accounts for roughly half of GDP of SSA, it has a large influence on the numbers.
*** All developing countries.

Source: World Bank, 1987, p. 204, 211, 209, 213, 225, 231, 239.

Table 2

Average Fiscal Ratios for Africa and Developing Countries, 1978-82

	Africa*	Developing Countries
	(percentage)	
Share of Central Government Expenditures and Lending Minus Repayment in GDP	25-	25
Share of Capital Expenditures in Expenditures and Lending Minus Repayments	24	19
Share of Taxes in GDP**	17	17
Share of International Trade Taxes in Revenue	22++	16
Share of Nontax Revenues in Revenue	12-	21
Share of Grants in Revenue	3++	2

* Sub-Saharan Africa plus Morocco, South Africa and Tunisia. Since the averages are weighted by (1980) GDP, they are heavily influenced by South Africa, Nigeria, and Morocco. The pluses and minuses indicate the probable direction of change in the average if these countries were also omitted.

** Calculated as (Revenues/GDP) minus the sum of (Nontax Revenues/GDP) and (Grants/GDP).

Source: IMF, Government Finance Statistics Yearbook, 1985.

Appendix
An Accounting Framework

The balance sheet identity for the central bank takes the form[34]

$$E \cdot F + DC = C + RES + NW = H + NW \tag{A1}$$

where E is the nominal exchange rate (cedis per dollar), F is dollar foreign exchange reserves, DC is central bank lending to the government, C is currency, RES is reserves of private banks, and NW is net worth of the Central Bank. We will assume that capital gains or losses on foreign exchange reserves, (dE/dt) F, are absorbed in net worth and do not therefore affect the monetary base H.

Suppose that all of the external debt of the economy is held by the fiscal authorities, either directly or indirectly through parastatal

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[34] In the Franc Zone and SACU, a single central bank is shared by the members of the monetary union. In this case, the union central bank has a balance sheet of the form

$$E \cdot F^P + \sum_i DC_i = C + \sum_i RES_i + NW = H + NW, \tag{*}$$

where i indexes member countries. F^P is the pooled reserve stock of the union, and DC_i and RES_i are domestic credit to country i and deposits of country i's government and private banking sector in the central bank, respectively. The balance sheet for the banking sector of country i takes the form

$$DCG_i + DCP_i + NRES_i + E \cdot XF_i = DD_i + NW_i, \tag{**}$$

where DD and XF are deposits and excess (non-pooled) foreign exchange reserves, respectively, DCG and DCP are lending to the domestic government and private sector, and NRES is net deposits at the central bank.

enterprises. There is no domestic market for government bonds, so the nominal non-interest government deficit, G - T, must be financed by borrowing either from the central bank or from external sources, or by external grants, R. Using dots above variables to denote time derivatives, we therefore have

$$(A2) \qquad (G - T) = E\,R + i(E \cdot F) + \dot{DC} + E \cdot \dot{DEX} - i^d(E\,DEX),$$

where DEX is the country's external debt, i^d is the average interest rate on that debt, and i is the risk-free interest rate in international markets, which is received on reserves. The value of i^d is typically below i for sub-Saharan Africa, since most external debt is from official sources at concessional rates.

Normalizing by nominal GDP (= Y) and substituting for DC from (A2), we get

$$(A3) \qquad g-t-r = \dot{H}/Y + E(\dot{DEX} - \dot{F})/Y - i(dex - f) - (i^d - i)dex,$$

where g = G/Y, r = E R/Y, etc.[35] Finally, using "^" to denote a logarithmic growth rate, we get

$$(A4) \qquad g-t-r = (\hat{h}+\hat{y}+\pi)h + \hat{dex} \cdot dex + (i-i^d)dex - \hat{f} \cdot f - ([i+\hat{E}-\pi]-\hat{y})\,(dex-f),$$

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[35] I have assumed in (5) that changes in the value of international reserves due to exchange rate movements are accounted for separately by the central bank and do not affect high powered money.

where π is the rate of change of P and y is real GDP in terms of the domestic consumption basket (y=Y/P). Decomposing the domestic price index, the quantity π - E can be written as the sum of foreign inflation (inflation in the foreign currency price of imports) and a positive linear combination of the rate of improvement in the terms of trade and the rate of real appreciation (the latter defined as the rate of increase of nontraded goods prices relative to traded goods prices). In this case, for fixed i, either a real appreciation, a terms of trade improvement, or an increase in world inflation will offset debt service by eroding the real value of the debt in terms of the domestic consumption basket (cf. Dornbusch (1978)).

Equation (A4) is useful in tracing the interaction of budget deficits, domestic money growth, and debt accumulation. It states that budget deficits as a share of GDP are financed by seigniorage on the domestic currency, growth in gross external debt as a proportion of GDP, and the concessional element in interest rates on foreign debt, and that these financing inflows must also cover the accumulation of reserves and interest payments on the net external debt. Note that if i^d is interpreted as the promised interest rate on external debt, the growth in external debt also includes increases in arrears.

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